

**REMARKS**

The present response is intended to be fully responsive to all points of rejection raised by the Office Action and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

The present application includes 19 claims. Claims 1, 9, 14 and 17 are in independent form. Claims 2-8 depend from claim 1. Claims 10-13 depend from claim 9. Claim 15 and 16 depend from claim 14. Claims 18 and 19 depend from claim 17. Each of the dependent claims necessarily includes all the elements from the base claims and any intervening claims.

The Office Action objected to the drawings of the present application as noted below. The Office Action also objected to the specification for several informalities. Claims 12 and 15 were objected to because "in line 2, the phrase 'being supplied to' should be inserted between the terms 'after' and 'a'." Claim 14 was objected to because "in line 3, the term 'the frame' is recited... [t]his should be changed to 'a frame'."

The Office Action rejected claims 1, 2-8, 10 and 11 under 35 U.S.C. § 112, second paragraph. Claims 14 and 17-19 were rejected under 35 U.S.C. § 102(b) and 35 U.S.C. § 102(e), respectively. The Office Action also rejected claims 15 and 16 under 35 U.S.C. § 103(a).

**Allowed and Allowable Claims**

At the outset, the Applicant thanks the Examiner for allowing claims 9 and 13, and noting that claim 1 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph. The Applicant also thanks the Examiner for noting that claims 2-8, 10 and 11 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph., and to include all the limitations of the base claim and any intervening claims.

**Response to the Objection of the Drawings**

Figure 1 was objected to for not including a "Prior Art" label according to M.P.E.P. § 608.02(g). In addition, the drawings were also objected to under 37 C.F.R. § 1.83(a) for not showing (i) the differential decoding being performed after a multiple modulus decoder of claims 12 and 15, (ii) the frame being differential encoded before being supplied to a multiple modulus encoder of claims 13 and 16, (iii) the differential encoding being performed to the input of the multiple modulus encoder of claim 18, and (iv) the differential decoding being performed on the input to the multiple modulus decoder of claim 19.

The Applicant has amended Figure 1 to include the label "Prior Art". The Applicant, without adding new matter, has amended Figure 2 (now Figures 2a and 2b) to overcome the objections to claims 12, 13, 15, and 16 set forth in Office Action. Figure 2b now shows (i) the frame being differential encoding before being supplied to a multiple modulus encoder, and (ii) differential decoding being performed after a multiple modulus decoder. With out adding new matter, the specification has been amended to be consistent with the amendment to the drawings. With respect to the objections to the claims 18 and 19, the Applicant has cancelled these claims without prejudice, thereby making the objections moot.

Replacement sheets for Figures 2a and 2b are included as part of this response. The Applicant believes the amended drawings overcome the Office Action objections.

**Response to Objection of the Specification**

The Applicant, without adding new matter, has amended the specification to overcome the objections of the Office Action. First, Figure 1 now has a label showing the output of block 105 to be  $K_0:K_{11}$ , which is mapped to equivalence classes  $u(n)$ . The paragraph of the specification beginning on page 4, line 1 has also been amended to relate the label " $u(n)$ " to equivalence classes. Second, the

paragraph beginning on page 7, line 1 of the specification has been amended to correct the incorrect reference numeral "210" to "215." In light of these changes, the Applicant submits that the objections to the specification have been overcome.

#### **Response to Objections of the Claims**

The Applicant has amended claims 12 and 15 to include the phrase "being supplied to" between the terms "after" and "a" to overcome the objection put forth in the Office Action. The Office Action objected to claim 14 because the term "the frame" is recited instead of "a frame." Because the Applicant has cancelled claim 14 without prejudice, this objection is moot.

#### **Response to Claim Rejections under 35 U.S.C. § 112, second paragraph**

As shown above, the Applicant amends claims 1, 2-8, 10 and 11 to overcome the rejections under 35 U.S.C. § 112, second paragraph. Claim 1 now recites element to particular point out and distinctly claim the subject matter that the Applicant regards as the invention. The Applicant amends claim 1 to overcome all the antecedent basis rejections and to make clear that the channel output comprises the differentially encoded sign and frame.

The Applicant also amends claims 2, 3, 4, 10 and 11 to make clear that the previously recited phrase "the sign" refers to the "sign of the frame." Claims 2, 3, 10 and 11 have been amended to correct the antecedent basis rejections. In these claims, the phrase "the frame value" has been replaced with the phrase "a value of the frame," and the phrase "the moduli" has been replaced with the phrase "a moduli for encoding the frame."

#### **Response to Rejections under 35. U.S.C. § 102**

As noted above, claims 14 and 17-19 were rejected under 35. U.S.C. § 102(b) and 35 U.S.C. § 102(e), respectively. Specifically, claim 14 was rejected under 35. U.S.C. § 102(b) as

being anticipated by U.S. Patent No. 5,555, 547 (*Lemaitre et al.*). Claims 17-19 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,418, 170 (*Maurer et al.*).

The Applicant has cancelled claims 14 and 17-19 without prejudice, thereby making these rejections moot. The Applicant, however, reserves the right to prosecute claims 14 and 17-19 at a later time.

#### **Response to Rejection under 35 U.S.C. § 103(a)**

The Office Action also rejected claims 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over *Lemaitre et al.* in view of U.S. Patent No. 6,084,883 (*Norrell et al.*). In light of amending claims 15 and 16 to depend from claim 1, the Applicant respectfully submits this rejection is moot. Further, the Applicant submits that claims 15 and 16, as amended, are allowable due to their dependency from claim 1, which the Applicants believe is allowable in its amended form.

#### **New Claims**

The Applicants request examination of newly added claims 20-33. Of these new claims, claims 20 and 27 are in independent format. The Applicants submit that no new matter has been added. Favorable consideration of all the new claims is requested.

Independent claim 20 includes the elements (i) determining a sign of a frame, (ii) differentially encoding the sign of the frame, (iii) applying the differentially encoded sign to the frame so as to produce a first encoded frame, (iv) differentially encoding the first encoded frame so as to produce a second encoded frame, and (v) transmitting a channel output comprising the second encoded frame. The Applicant notes that elements (i)-(ii) and (iv)-(v) are similar to amended claim 1, which the Applicants believe is now allowable. Because they depend from independent claim 20, claims 21-26 necessarily include the elements of independent claim 20.

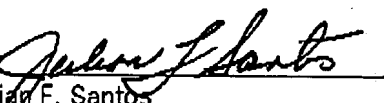
Independent claim 27 includes the elements (i) receiving a channel output comprising a first encoded frame, wherein the first encoded frame comprises a differentially encoded second-encoded frame, and wherein the second-encoded frame comprises a differentially encoded sign of a frame applied to such frame; (ii) differentially decoding a sign of the channel output; and (iii) differentially decoding the channel output so as to obtain the frame, wherein the differentially decoded sign of the frame and frame provide the frame with the proper sign. The Applicant notes that elements (i)-(iii) are similar to elements of amended claim 1. Due to their dependency from independent claim 27, claims 28-33 necessarily include the elements of independent claim 27.

### Conclusion

In view of the foregoing remarks, the Applicant submits that the pending and new claims are in good and proper form for allowance, and the Applicants respectfully request the Examiner to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would otherwise expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at 312-913-3304.

Respectfully submitted,

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